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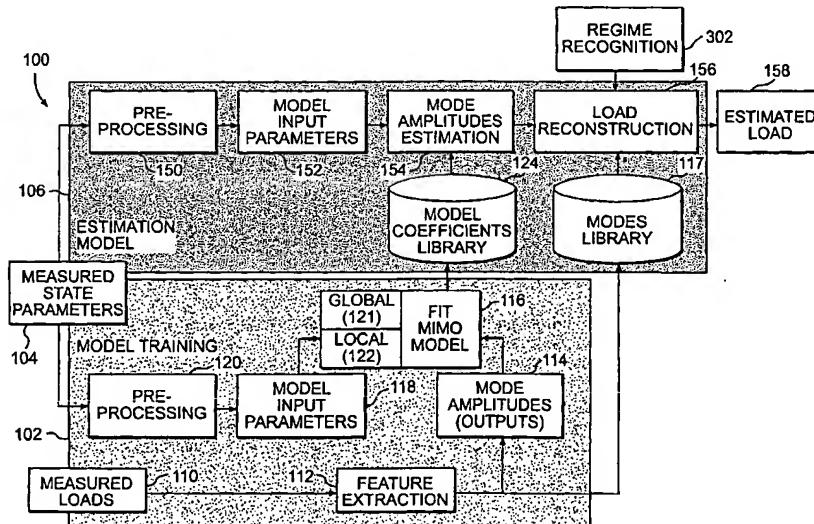
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(54) Title: VIRTUAL LOAD MONITORING SYSTEM AND METHOD



(57) Abstract: A method and system estimates a desired output signal waveform based on measured state parameters. A model training step generates a model by empirically obtaining measured signal waveforms corresponding to measured state parameters. Features, such as mode shapes and mode amplitudes, are extracted from the measured signals and stored in an estimation model along with coefficients of the model that correlate measured state parameters with the mode amplitudes. During part operation, the state parameters measured during operation are entered into the estimation model to obtain estimated features in a estimated signal waveform. The estimated features are then used to synthesize the estimated signal reflecting the actual operation of the operating part. The estimation model therefore allows estimation of an entire signal waveform from the state parameters.

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